OXIDATION IN FRESH AND SPRAY-DRIED ω3 AND ω6 FATTY ACID ENRICHED EGGS. VITAMIN E AND CANTHAXANTIN.

J. Galobart[1]; A.C. Barroeta[1]; M.D. Baucells[1] and F. Guardiola[2]
[1]UD Nutrició i Alimentació Animals. Universitat Autònoma de Barcelona. 08193 Bellaterra. Spain. E-mail: Ana.Barroeta@uab.es
[2]Dep. Nutrició i Bromatologia-CeRTA. Universitat de Barcelona. Av. Joan XXIII, 08028 Barcelona. Spain.

INTRODUCTION

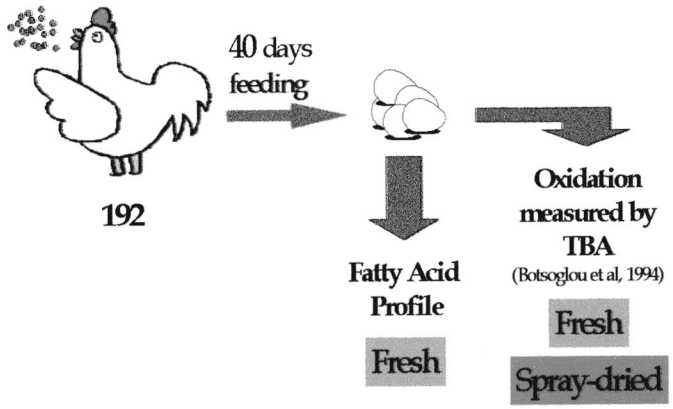
Consumption of products enriched in ω3 fatty acids such broiler meat or eggs are associated to health benefits. However, the increase in unsaturation of the lipids present in the food may cause a reduction in its oxidative stability, decreasing its nutritive and organoleptic value and producing toxic lipid oxidation products. Supplementation of animal diets with natural antioxidants

The objective of this study was to compare the antioxidant activity of canthaxanthin *vs.* α-Tocopherol dietary supplementation in ω3 and ω6 fatty acids enriched eggs.

MATERIALS AND METHODS

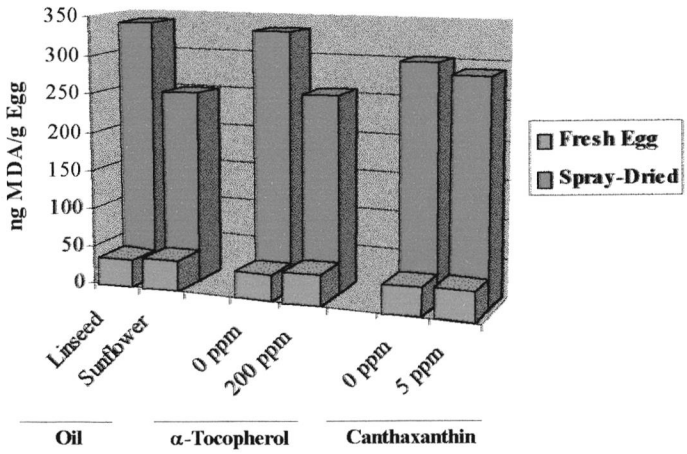
Experimental Diets. Basal diet supplemented with:

Treatment	Oil 5%	α-Tocopheryl acetate (ppm)	Canthaxanthin (ppm)
L	Linseed	0	0
LE	Linseed	200	0
LC	Linseed	0	5
LEC	Linseed	200	5
S	Sunflower	0	0
SE	Sunflower	200	0
SC	Sunflower	0	5
SEC	Sunflower	200	5



RESULTS

TBARS values in fresh and spray-dried egg.



Eggs from hens fed diets with linseed oil showed higher levels of ω3 PUFA (10.45%) than those from hens fed diets with sunflower oil (1.4%).

On fresh egg there were no differences in TBARS values for any of the variation factors.

When eggs were spray-dried, there was an increase 7-8 fold in the TBARS values. Eggs from linseed diets showed higher values than those from sunflower diets (L: 338.7 *vs.* S: 248.6; p≤ 0.05). Parallel, eggs from diets without α-tocopherol supplementation showed values 23.6 % higher than those from suplemented diets (E-: 332.9 *vs.* E+: 254.4; p≤ 0.05). 5 ppm of dietary canthaxanthin had no effect on egg lipid oxidation (C-: 301.0 *vs.* C+: 286.3). No interaction was found between α-tocopherol and canthaxanthin.

CONCLUSIONS

ω3 fatty acid enriched eggs are more susceptible to oxidation than ω6 fatty acid enriched eggs. Dietary supplementation with 200 ppm of α-tocopheryl acetate can certainly reduce the oxidation induced by the spray-drying process, but supplementation with 5 ppm of Canthaxanthin had no significant effect as antioxidant.

This work was supported in part by a grant from the Comissionat per Universitats i Recerca, Generalitat de Catalunya, and a project CICYT ALI95-0602.
α-Tocopherol and Canthaxanthin generoulsy provided by F. Hoffmann-LaRoche Ltd.